FINISHING SHOULDERS, DITCHES AND SLOPES

Finishing Shoulders, Ditches and Slopes

Archeological/Historic Preservation

During the environmental document preparation phase, the proposed right-of-way is cleared archeologically and historically. An archeological records check and an archeological reconnaissance, if necessary, are conducted for the project area. Previously undisturbed existing and proposed right-of-ways are usually included in the archaeological reconnaissance. The findings of the archeological reconnaissance and historical data are included in the environmental document.

Despite these precautions, on rare occasions, artifacts are discovered. Construction crews and project engineers should be alert to the presence of:

- properties 50 years old or older,
- archeological artifacts (such as bones, stone tools including arrowheads, pottery),
- features (such as shell or charcoal concentrations, foundations),
- human remains.

If artifacts, features, or remains are uncovered during the finishing of the shoulders, ditches and slopes, state law requires that the work stop in the area of the discovery, and that the discovery be reported to the Division of Historic Preservation and Archaeology, IDNR, within 2 working days. **First notify the Division of Operations Support of the finding, then report the discovery to IDNR at (317) 232-1646, FAX (317) 232-8036. Do not allow anyone to collect artifacts from the discovery except the appropriate IDNR or INDOT archaeological staff.** The archaeological staff will delineate the limits of the work stoppage. Work on the remainder of the project can proceed as normal. If the discovery is of sufficient importance, IDNR may wish to properly excavate the area and have it guarded. If this occurs, contact the Division of Operations Support for guidance.

See Archeological and Historic Section in the Laws and Regulations Section for further information.

Army Corps of Engineers Section 404/Section 10 Permits (U.S.)

Excavation and/or discharges of dredged or fill materials in waters of the United States below the ordinary high water elevation on each bank requires a U.S. Army Corps of Engineer's Section 404 Permit prior to the commencement of construction. Section 404 of the Clean Water Act requires a permit for filling and grading work, mechanized land clearing, ditching or other

excavation activity and piling installation. A Section 10 Permit is required for the obstruction or alteration of navigable waters of the U.S. This authority is based on the Rivers and Harbors Act and regulates work river ward or below the ordinary high water elevation of a navigable stream. Navigable waters of the U.S. are those waterways that are now used, or have been used in the past, or may be used in the future to transport interstate or foreign commerce.

If the ditch is not located within the Waters of the United States, no U.S. Army Corps of Engineer's Permit is required.

For the Section 404 permit in non-tidal waters, the limits of jurisdiction are as follows:

1. No wetlands* present - jurisdiction is between the limit of the ordinary high water elevation on each bank.
2. When adjacent wetlands are present - the jurisdiction extends beyond the ordinary high water mark to the limits of the adjacent wetlands.
3. When only wetlands are present, the limit of jurisdiction extends to the limits of the wetlands.

Waters of the United States include rivers, streams, creeks, intermittent tributaries, natural ponds, prairie potholes, impoundments, lakes and wetlands. They do not include land that was converted from wetland to cropland prior to December 23, 1985, nor do they include waste treatment systems such as treatment ponds or lagoons designed to meet the requirement of the Clean Water Act.

See Army Corps of Engineers Section 404/Section 10 Permit (U.S.) in the Laws and Regulations Section.

Burning

Open Burning

Open burning is generally prohibited. If it is determined that there is no alternative to the burning of woody material, then an Open Burning Variance must be obtained from the Indiana Department of Environmental Management (IDEM). For INDOT projects involving clearing of less than 4 (1.6 ha) acres, the contractor must obtain a variance. For projects clearing greater than 4 acres, INDOT will obtain the variance. Fires must be attended at all times until completely extinguished. No burning shall be conducted during unfavorable meteorological conditions such as temperature inversions, high winds, air stagnation, etc. Clark, Floyd, Lake and Porter counties have an air quality problem and will not allow any open burning variances. Some cities will have additional local restrictions. Additional information can be found in Operating Procedure 13. All pertinent training and personal protective equipment requirements should be obtained through the Safety Supervisor.

Air Curtain Destructor (Burning)

An air curtain is two long pipes constructed into a "T" shape which is positioned next to a pit in the ground with approximately 12 to 15 ft. depth and 10 ft. width. The length of the pit is a function of the length of the pipe. A fan is connected at the end of the "T" shape and forces air through a slit at the other end. This curtain of air is blown into the pit where the burning of the

woody material should be maintained below the curtain of air. A completed application and $50 fee must be submitted at least 30 days before operation begins to the Department of Environmental Management (IDEM) to obtain an approval letter which must remain at the air curtain destructor site at all times. Only untreated wood products shall be burned. The air curtain destructor shall be located no less than 250 feet from any private residence, public roadway, power line, or structure, no less than 500 feet from any pipeline or fuel storage area, and within 1,000 feet of a landfill or transfer station. A list of approval conditions can be found in the Laws and Regulations Section.

Asbestos Burning

Asbestos is a mineral with long, thin fibrous crystals. Its strength and the unique property of having a high melting point made asbestos an ideal material for many products, especially insulation and fireproofing. Because of its resistance to heat, asbestos is not destroyed in the fire and will become airborne when liberated from its confining matrix. The asbestos fibers are microscopic and entrainment in the air presents a health hazard to the respiratory system. Construction projects may involve exposure to asbestos with building renovation/demolition or burning. Asbestos material has been found in approximately 20% of all buildings. It is most likely to occur in buildings built between 1950 and 1975. 326 IAC 4-1-3 (a) (2) (D) states that all asbestos containing materials must be removed before the burning of a structure.

See the Burning Section of the Laws and Regulations Section for further information.

Construction in a Floodway

Any project involving construction, excavation, or placement of fill within the floodway of any river or stream unless exempted, requires the written approval of the Indiana Department of Natural Resources (IDNR) prior to initiating the activity. A floodway is defined as the channel of a river or stream and those portions of the flood plain adjoining the channel, which are reasonably required to carry and discharge the flood water or flood flow of any river or stream. Typically this is the 100 year floodway. Generally, any activity, which disturbs soil or sediments within the floodway, and does not meet the requirements of the bridge exemption, requires a permit from IDNR.

If the ditch is not located within the 100 year floodway of a waterway, no Construction in a Floodway Permit is required. Except for the construction of dams, dikes, or levees, work in floodways along rivers and streams where the drainage area is **less than 1 square mile**, requires no Construction in a Floodway Permit.

See the Construction in a Floodway Laws and Regulations section for more detailed information.

Ditch Reconstruction

Any person proposing to undertake activities affecting ditches or drains within ½ mile of a public fresh water lake, where the bottom elevation of the ditch would be lower than the legal or average water level of the lake must obtain a Ditch Permit from the Indiana Department of Natural Resources. A *public freshwater lake* is a naturally occurring body of water for which

access is provided by the property owner to the general public, **excluding** Lake Michigan, lakes within the city of Hammond, borrow pits, sinkholes, or privately owned water bodies associated with surface coal mining. Most public freshwater lakes are located in the northern part of the state. In assessing the proposed project,

See the Ditch Reconstruction Section of the Laws and Regulations Section for detailed information.

Endangered Species

Endangered species in the State of Indiana include the bald eagle, Indiana bat/gray bat, Northern (Blind) Cave fish, and mussels. The environmental document and the permit **(Construction in a Floodway Permit issued by the Department of Natural Resources, Division of Water, under the Flood Control Act, IC 14-28-1)** which is included in the contract documents, should mention any endangered species in the area of the bridge project and the protective measures that are required to ensure that no impact is made to either the life forms or their habitat.

See the Endangered Species Section of the Laws and Regulations Section for detailed information (State Endangered Species Act IC 14-22-34).

Fugitive Dust

Fugitive dust means the generation of particulate matter to the extent that some portion of the material escapes beyond the property line or boundaries of the property, right-of-way, or easement on which the source is located regardless of whether from a single operation or a number of operations. Simply, if at least fifty percent (50%) of the dust can be breathed in or is visible crossing the right-of-way, it is fugitive dust.

The finishing of shoulders, ditches and slopes may generate fugitive dust. Indiana code states that fugitive dust from construction or demolition where **every reasonable precaution has been taken in minimizing fugitive dust emissions** is exempted from the fugitive dust rule. This code also provides some fugitive dust control measures. These include spraying with water or treating with an approved oil or chemical dust suppressant. These precautions are especially important on dry, windy days.

The contractor must take every reasonable precaution to ensure that dust does not cross the right-of-way.

See the Fugitive Dust Section of the Laws and Regulations Section for detailed information.

Hazardous Material

During the early development of INDOT projects, the proposed right-of-way undergoes an investigation for the presence of hazardous waste. If found, INDOT attempts to have the site cleaned prior to the purchase of the property. Although it is desirable, hazardous materials cannot always be taken care of prior to the construction of INDOT projects. Known or unknown hazardous waste sites may have to be dealt with on INDOT right-of-way during the construction phase.

During the finishing of shoulders, ditches and slopes, workers may come into contact with contaminated, excavated materials. When finishing shoulders, ditches and slopes, be on the lookout for the following indications that you may be dealing with hazardous waste:

- the discovery of abandoned drums, barrels, old paint cans, chemical containers, tanks, pits, lagoons or ditches, discharge pipes
- surface water plumes
- debris piles
- raw material storage piles
- areas with burn marks
- an area that used to be a loading ramp or railroad staging area
- barren soil areas
- obvious changes in vegetation
- dead trees/shrubs
- recent ground disturbances
- surface staining or discoloration of soils
- odors

If soils are suspected to contain hazardous material, stop work and remove all personnel from the area immediately and notify the Division of Operations Support. Cordon the area off and deny entry until classification of the contaminant has been made. Testing may be required to determine the waste classification of the contaminated material. Only properly trained (INDOT and contractor) personnel should be allowed in the area of the hazardous material. Contact the Division of Operations Support for guidance.

The hazardous material, if it is to be disposed of, must be disposed in a hazardous waste landfill. When less than 100 kilograms of hazardous waste has been generated in a single month, and disposed of in quantities less than 100 kilograms, it can be considered solid waste. Normally these materials may be disposed of in any approved sanitary landfill.

A hazardous waste manifest signed by the generator (INDOT) must accompany each load of hazardous waste from cradle to grave. INDOT must notify IDEM of your activities and obtain an EPA Identification Number. The manifest certification must be signed by INDOT and the transporter and have the date of acceptance of waste. INDOT must retain one copy of the report and give the transporter the remaining copies of the manifest.

See the Hazardous Materials Section of the Laws and Regulations Section for further information.

Karst

Karst landscapes are usually formed on limestone from the surface and subsurface removal of rock mass by dissolution of calcite or dolomite. This forms irregularities on the land surface. Karst areas normally have caves that developed as a result of dissolution along joints, bedding planes, or other openings. As ground water dissolves subsurface limestone, cave systems enlarge and eventually the overburden will cause roofs of caves to collapse creating, on the surface, a bowl shaped land feature called a **sinkhole.** Sinkholes are direct conduits to ground water. Because the dissolution along the joints and bedding planes, ground water can travel extremely fast relative to ground water in other types of aquifers. Adsorption to aquifer material, biological uptake, and microbial activity are a few processes to reduce ground water

pollution. However, in a karst region ground water flows through joints and along bedding planes much like water flows through pipes in our homes. This fast flow rate does not allow adsorption, microbial activity, or uptake processes to remove pollution from the ground water before it is pump from the ground by a landowner.

Karst features exist in an area of southern Indiana. This area ranges from 10-50 miles wide and stretches from Crawfordsville to the Ohio River (see attached map). INDOT in the planning, design, and construction of road projects in the karst area have given much attention. There are, however, certain responsibilities assigned to maintenance activities. INDOT has entered into a **Memorandum of Understanding** (attached) with other agencies in an effort to learn more about karst features and to regulate certain activities in those areas. Included in this Memorandum of Understanding is a commitment from INDOT, Indiana Department of Natural Resources, Indiana Department of Environmental Management, and the U.S. Fish and Wildlife Service to determine the location of sinkholes, caves, underground streams, and other related Karst features and their relationship prior to proposed alterations or construction in karst regions of the State.

Roadways typically have runoff such as salt and unknown spills that pollute soils near the road. In karst terrain, construction activities may cause soil releases to ground water via nearby sink holes. Excess silt introduced into a sinkhole may seal a fissure system effectively removing means of draining the roadway. A wide range of toxic contaminants adheres to soils and may be liberated when soils are introduced into water. Contractors are required to have an erosion control plan, however, timely implementation of the plans are very important in the karst terrain. Maintenance of heavy machinery, such as oil changes, should be done in a designated area, which should not be near the sinkhole. After adverse weather conditions, check erosion control measures for damage. The use of peat and other types of filters and wide grassy areas to catch and clean contaminants are some methods currently being used by INDOT to protect the groundwater. Likewise a project in a karst area might include the construction of detention and/or retention basins. Regular inspections should be scheduled to ensure minimum and satisfactory compliance with the Memorandum of Understanding.

Clearing right-of-way, grading, excavation, tile drains, pesticide and herbicide treatment, and runoff from roadways are a few issues that may endanger the ground water quality in karst regions. It is important therefore, that you are aware of potential environmental impacts that could occur if construction activities were conducted in the usual manner. In addition to the possible lethal effects on wildlife, contamination of ground water used for drinking water could occur. Regular inspections should be scheduled to ensure minimum and satisfactory compliance with the Memorandum of Understanding. Any sinkhole modification may result in the need for an EPA Injection Well Permit. The Division of Operations Support should be contacted in this event or to answer any question concerning karst area activities.

> *The **Memorandum of Understanding** states that prior to acceptance of the final design plans an agreement will be developed which will set out the appropriate and practicable measures to offset unavoidable impacts to karst features. This agreement will be signed by the Department Director of Indiana Department of Natural Resources (IDNR), the Commissioner of the Indiana Department of Environmental Management (IDEM), the commissioner of INDOT, and the Supervisor of the U.S. Fish and Wildlife Service (USFWS) Bloomington, Indiana field office. The agreement will become a part of the contract documents for the project, will be discussed at the pre-construction conference and will be on file at the office of the project administrator. INDOT will assure that the terms of the agreement will be completed with all safeguards given to the karst area.*

Special provisions, which are binding provisions that are a part of the contract, will be included outlining the precautions to be taken. Constructions and design strategies for handling karst features will be discussed with the contractor(s) and project administrator during the pre-construction conference. Project administrator shall ensure that the contractor is following the new erosion control standards that meet rule 5 of 327 IAC 15 and any special precautions outlined in the design plans that the sinkhole treatment is being handled correctly. The erosion control plan must be available at the project administrator's office. An emergency response plan will be made a part of the contract documents. In addition, the contract documents will contain a strategy for signing to alert the public to the fact that all types of spills are potentially hazardous to the karst environment. For INDOT, this plan would be procedure 20 of the field operations manual dated 6/24/92.

See the Karst Section of the Laws and Regulations Section for further information.

Lake Preservation Act (Permit)

The Lake Preservation Act mandates that any person proposing to perform an activity such as finishing shoulders, ditches and slopes at or lakeward of the legal shoreline or average normal water level (mark) of a public freshwater lake must obtain written approval of the Indiana Department of Natural Resources prior to initiating the activity. A *public freshwater lake* is a naturally occurring body of water for which access is provided by the property owner to the general public, **excluding** Lake Michigan, lakes within the city of Hammond, borrow pits, sinkholes, or privately owned water bodies associated with surface coal mining. Most public freshwater lakes are located in the northern part of the state.

See the Lake Preservation Act Section of the Laws and Regulations Section for further information.

Navigable Waterway Permit

A Navigable Waterway permit is required from IDNR when working below the ordinary high water mark within the floodplain of a navigable waterway. This includes any activity, which disturbs sediments below the high water mark, including finishing shoulders, ditches and slopes in a navigable waterway. A list of navigable waterways is included in the Laws and Regulations Section under Navigable Waterway Permit. If the ditch is not located within a navigable waterway, no Navigable Waterway Permit is required.

An IDNR Construction in a Floodway Permit can also serve as a Navigable Waterway Permit. However, exemption from the Construction in a Floodway Permit does not exempt you from obtaining a Navigable Waterway Permit.

See the Navigable Waterway Permit Section of the Laws and Regulations Section for further information.

Rule 5-Erosion Control

The requirements of Rule 5 apply to projects, which disturb 5 acres or more of total land area. Projects that result in the disturbance of less than 5 acres, but are part of a larger common plan of development or sale are also subject to Rule 5. If neither of these applies, then Rule 5 does not apply. However, erosion control practices should still be utilized at the site regardless of the land area that is disturbed. Often erosion control measures are conditions of permits. It is the responsibility of the project engineer to ensure that erosion control measures are properly maintained. Frequent temporary seeding can be one of your most effective tools in controlling erosion.

See the Rule 5-erosion control regulations section for detailed information.

Section 401 Water Quality Certification

Excavation and/or discharges of dredged or fill materials in waters of the United States below the ordinary high water elevation on each bank requires a U.S. Army Corps of Engineer's Section 404 Permit and possibly a Section 401 Water Quality Certification prior to the commencement of construction. For non-tidal waters, the limits of jurisdiction are as follows:

1. No wetlands present - jurisdiction is between the limit of the ordinary high water elevation on each bank.
2. When adjacent wetlands are present - the jurisdiction extends beyond the ordinary high water mark to the limits of the adjacent wetlands.
3. When only wetlands are present, the limit of jurisdiction extends to the limits of the wetlands.

Waters of the United States, generally speaking, include rivers, streams, creeks, intermittent tributaries, natural ponds, prairie potholes, impoundments, lakes and wetlands.

The Section 401 Water Quality Certification is the state's certification to the U.S. Army Corps of Engineers that the project complies with the state's water quality standards. The Indiana Department of Environmental Management (IDEM) is responsible for the Section 401 Water Quality Certificate review process in Indiana.

If the ditch is not located within the Waters of the United States, no Section 401 Water Quality Certification is required.

See the Section 401 Water Quality Certification Section of the Laws and Regulations Section for further information.

Sole Source Aquifers

A sole source aquifer is an areas only source of drinking water. In Indiana, the sole source aquifer of concern is located mainly in St. Joseph and Elkhart counties. A confined aquifer is one where a protecting clay layer severely retards surface water from migrating into and contaminating the ground water. An unconfined aquifer is open to contamination from the infiltration of surface water. In St. Joseph and Elkhart counties, most of the aquifer is unconfined and subject to contamination from a variety of activities. Contamination from

roadway runoff is a constant threat to the St. Joseph aquifer. Therefore, it is important that ditches be constructed so that they will drain and be free of water pockets.

A Memorandum between the Federal Highway Administration (FHWA), Region 5 and the U.S. Environmental Protection Agency (EPA), Region 5 states that FHWA agrees not to commit Federal financial assistance to any project which EPA determines may contaminate a sole source aquifer through its recharge zone so as to create a significant hazard to public health. The requirements of this agreement apply to any Federal Aid highway project determined to be wholly or in part within a sole source aquifer designated area and to which one or more of the following criteria apply:

(1) Construction of additional through-traffic lanes or interchanges, on existing roadways.
(2) Construction of a two or more lane highway on new alignment.
(3) Construction of rest area or scenic overlooks with on-site sewerage disposal facilities.
(4) Any project involving a new or existing well within a designated sole source aquifer area.
(5) Any other project that FHWA, in consultation with EPA, believes may have a potential to affect the designated aquifer through its recharge zone so as to create a significant hazard to public health.

See the Sole Source Aquifer Section of the Laws and Regulations Section for further information.

Solid Waste Disposal

Uncontaminated dirt, rock, bricks, concrete and dried asphalt may be disposed of on INDOT property or in a Municipal Solid Waste Landfill (MSWLF). These materials are not subject to the solid waste regulations. Uncontaminated material may be used as clean fill. Vegetative matter resulting from landscaping project maintenance and land-clearing projects may be disposed of at a Municipal Solid Waste Landfill (MSWLF). This includes:

- grass;
- woody vegetative matter (i.e.: twigs, branches) that is less than 3 feet in length and is bagged, bundled, or otherwise contained;
- very small amounts of vegetative matter less than 3 feet in length if it is bagged, bundled, or otherwise contained and combined with other solid waste.

When less than 100 kilograms of total solid or hazardous waste has been generated in a single month, and disposed of in quantities of less than 100 kilograms, it can be considered a solid waste. Do not dispose of solid waste anywhere other than a permitted disposal site.

Spill Response

Hazardous material releases, oil spills, fish/animal kills and radiological January 6, 2003incidents must be reported to Office of Emergency Response, IDEM **(888) 233-7745.** This

should occur as soon as action has been taken to either contain/control the extent of the release, or protect persons, animals or fish from harm or further harm. Appropriate response actions for spills occurring on project sites, in order:

1. Identify the spilled material from a safe distance,
2. Contain the spilled material or block/restrict its flow using absorbent booms/
   pillows, dirt, sand or by other available means,
3. Cordon off the area of the spill,
4. Deny entry to the cordoned off area to all but response personnel, and
5. Contact OER/IDEM then Operations Support.

See the Spill Response Section of the Laws and Regulations Section for further information.

Underground Storage Tanks/Leaking Underground Storage Tanks

Unknown and/or unregistered underground storage tanks (UST) and leaking underground storage tanks (LUST) are occasionally encountered during construction projects. State and federal regulations regarding USTs are enforced by the Indiana Department of Environmental Management (IDEM). Notification of IDEM and submittal of closure reports are usually required, depending on when the tank is discovered and whether or not it is a regulated UST. A contractor or individual certified through the Office of the State Fire Marshall (OSFM) must be on-site while all UST work is being conducted. If contaminated soil or groundwater is discovered during the tank removal, then IDEM must be notified within 24 hours, and a LUST Site Investigation report and Corrective Action Plan must be prepared and submitted.

For sites with **small quantities** of soil contamination only, excavation and disposal at a solid waste landfill may be the quickest solution. However, land filling simply moves the contaminant from one location to another, and should therefore be avoided whenever possible. **Where contaminated soil is encountered within the right-of-way, and the source of contamination (the leaking underground storage tank) is not located on INDOT property or removed by INDOT's contractor then INDOT is not considered the owner/operator, and the contaminated soil can be returned to the excavation trench provided the following conditions have been met:**

1. underground equipment, such as a storm sewer line, will not act as a conduit for further migration of the contamination;
2. impervious geological features will not be disturbed or punctured in a way that allows contamination to migrate into an aquifer;
3. cross-contamination of stacked fill material which expands the area of contamination will not be allowed;
4. migration of contamination in storm water runoff due to the stockpiling of excavated soil cannot be allowed (stockpiled contaminated soil should be

returned to the trench by the end of the day, or covered with plastic until it can be redeposited); and

5. Inversion of layers of contamination in the redeposited soil cannot be allowed.

If emergency conditions exist, then IDEM must be notified immediately.

See the UST/LUST Regulations Section for detailed information.